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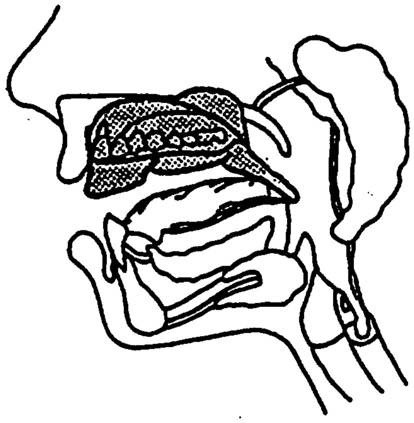
(54) Title: SNORGUARD ANTI SNORING DEVICE

(57) Abstract

A dental orthosis useful for an appropriate or intended human user in the treatment of snoring and/or sleep apnoea, the device comprising: palate fitting means (1) to fit on the upper teeth and against the hard plate of the user and to maintain an airway passageway for such a user during sleep through the oral cavity under at least most of said palate fitting means, and downwardly and rearwardly protruding means (4) supported by said palate fitting means (1) extending from below a plate covering rear part of said palate fitting means to extend downwardly and rearwardly a distance in the range of from 2mm to 20mm sufficient for such a user to prevent the falling back of the tongue of the user during sleep.



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"SNORGUARD ANTI SNORING DEVICE"

TECHNICAL FIELD

The present invention relates to a non-surgical means whereby people suffering from snoring and/or sleep apnoea may treat themselves.

BACKGROUND ART

In the publication "Principles and Practise of Sleep Medicine", Chapter 69 "Dental Appliances for the Treatment of Snoring and Obstructive Sleep Apnoea", there is disclosed a therapy sequence which includes the provision of dental appliances to a patient. A number of different sleeping dental appliances are disclosed.

Other examples of such devices includes US Patent Nos. 5,003,994, US5,018,533 US5,092,346, US5,117,816, US5,313,960, British Patent No. 1,569,129, PCT Application Nos. PCT/CH91/00204 (WO 92/05752), PCT/US92/00019 (WO 92/11827) and European Patent Application No. 0,312,368.

DISCLOSURE OF INVENTION

The present invention relates to an alternative to such existing products.

In a first aspect the invention consists in a dental orthosis useful for an appropriate or intended human user in the treatment of snoring and/or sleep apnoea, the device comprising

palate fitting means to fit on the upper teeth and against the hard palate of the user and to maintain an airway passageway for such a user during sleep through the oral cavity under at least most of said palate fitting means, and

downwardly and rearwardly protruding means supported by said palate fitting means extending from below a palate covering rear part of said palate fitting means to extend downwardly and rearwardly a distance in the range of from 2mm to 20mm sufficient for such a user to prevent the falling back of the tongue of the user during sleep.

Preferably said palate fitting means includes at least on the front thereof at least one downwardly extending means to space the lips of the user when the device is being worn.

Preferably said palate fitting means on each side thereof includes at least one downwardly extending means to space the users molars apart by being capable of bearing on the lower teeth between the canine teeth (if any) and the rearmost molar (if still present).

Preferably said palate fitting means is moulded as a fitted article for a particular patient at least in respect of that surface or those surfaces to fit on the upper teeth and hard palate.

Preferably said downwardly and rearwardly protruding means includes at its distal end (ie. that to be adjacent the tongue of a user) a surface configured to contact the tongue over a region to prevent said falling back of the tongue.

Preferably said palate fitting means is of polyethylene.

Preferably said palate fitting means is of polyethylene.

Preferably said downwardly and rearwardly protruding means is formed in a polyethylene material as two straps heated and joined together and attached to the palate fitting means as an attachment specific for an intended user.

Preferably said palate fitting means has been customised for an intended user and said downwardly and rearwardly protruding means has been customised for such a patient before or after attachment thereof to said palate fitting means, said palate fitting means and said rearwardly protruding means not being formed as an integral component.

Preferably said device is substantially as hereinafter described with reference to any one or more of the accompanying drawings.

In a further aspect the invention consists in componentry of a dental orthosis capable of being customised for a specific patient to provide a dental orthosis as previously defined, said componentry comprising

a blank to provide said palate fitting means and being conformable under the action of heat to fit the upper teeth and hard palate of an intended user, and

attached or attachable protruding means to extend downwardly and rearwardly a distance capable of being customised and/or after being customised for such an intended user.

Preferably each is formed from a polyethylene material.

In still a further aspect the invention consists in a method of treating a human being to minimise snoring and/or to treat sleep apnoea, said method comprising the step of customising a device as previously defined for such a patient and thereafter having the patient wear such a device during sleeping.

Preferably said customising for such a patient is by means of customising a selected preformed palate fitting means of polyethylene by vacuum forming with heat over a dental stone prepared from an alginate impression of the upper teeth and hard palate of the patient and before or after attachment of a selected said downwardly and rearwardly protruding means adjusting the same for length and/or angle.

Preferably the selection of said downwardly and rearwardly protruding means is by reference to the measurement for the patient from the last tooth on either the right or left upper side to the farthest point of the rearward top section of the tongue whilst fully relaxed.

Preferably the measuring to provide the referenced measurement is by using a wooden spatula while providing with such wooden spatula a downward pressure on the tongue.

Preferably said method performed substantially as hereinafter described with reference to any of the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

A preferred form of the present invention will now be described with reference to the accompanying drawings in which

Figure 1 is a plan view of a preferred device in accordance with the present invention,

Figure 2 is a view from below of the device of Figure 1,

Figure 3 is a side elevation view A-A of the device of Figures 1 and 2,

Figure 4 is a view in elevation from the direction B-B of the device of Figures 1 through 3,

Figure 5 is a cross section in elevation at C-C with respect to the embodiment of Figures 1 through 4,

Figure 6 is a front perspective view of the device of Figures 1 through 5,

Figure 7 is a front oral view of a person showing the device fitted in use with its protuberant region extending backwards over the tongue to stop the tongue from falling back and blocking the airway passage when the user's mouth is closed, and

Figure 8 is a lateral section of such a user showing the protuberance extending rearwardly to protrude down from within the range of from 2mm to 20mm from the appliance body proper projecting downwardly from that region of the body portion which is just in front of the soft palette.

BEST MODE(S) FOR CARRYING OUT THE INVENTION

In the preferred form of the present invention the device is ideally as depicted in the accompanying drawings having preferably been formed as follows:

the top section is vacuum formed from a dental stone prepared from an alginate impression of a user's top teeth and gums. An area is measured from the last tooth on either the right or left upper side to the faraway point of the rearward top section of the tongue with the tongue fully relaxed. This is done by holding a wooden spatula with downward pressure on the tongue. The top section is preferably vacuum formed polyethylene so as to hold the fabricated device firmly in place through suction, somewhat in the manner of a mouthguard therefor, the top section of body section proper 1 can be carried by the top teeth of a user.

Formed integrally with the polyethylene to be vacuum formed to conform to a users teeth or fabricated to the device is a downward depressor 2 designed to hold the bottom lip apart from the top lip of a user thus enabling the user to inhale without obstruction through the mouth. A pair of spacers 3 preferably to be positioned between the canine and the last molar keeps the top and bottom teeth separated by approximately 4 to 10mm which enables a clearer air passage between lips and the soft pallet.

A protuberant region 4 preferably fabricated by appropriate moulding, welding or the like to the formed polyethylene top section is of polyethylene preferably having been formed from two polyethylene straps joined together. The upper end region of the protuberant member 4 is joined to the hard pallet area of the upper section 1 at 5 and in some forms of the present invention irrespective of whether or not adhesive moulding or welding is utilised some mechanical interengagement of the components to be fabricated can be provided and other forms of the present invention a range of premoulded components may be provided which requires only the vacuum forming of an upper region where other aspects of the device are determined as being a proper fit for a potential user.

The preferred form however has the protuberant member fabricated separately and associated with the device after conforming thereof to the teeth of the user and the provision thereof (if they are not already integral) of this spacing members 2 and 3.

The narrower (lower) end of the protuberance preferably defines tongue resting pad 7 which is preferably substantially rectangular. The area of this pad depends entirely on the size of the tongue.

In the preferred form of the present invention the polyethylene straps are heated and manipulated to exact measurements which causes the pad to rest on an area between the long filiform and the foramen caecum positions on the tongue. The tongue is held in a fully relaxed downward position.

In the preferred form the protuberant member 4 and/or the straps thereof are to be kept as thin as possible to prevent airway restriction.

In use therefor a user as shown in Figure 8 can close his or her lower teeth up onto the device but still have an established airway passage and the device with its protuberant member preferably extending from 2mm to a maximum of 20mm down from the section 1, ie. the distance X is preferably within the range of 2mm to 20mm.

By stopping the tongue from retracting into the oropharynx which causes an airway blockage between the soft pallet, the tongue and the oropharynx an established air passage exists once the device has been worn.

Without the device, even where there is no blockage, air forced between the soft pallet, the tongue and the oropharynx with many people causes the soft pallet incorporating the uvula to vibrate on inward inhalation of air and to vibrate also on exhalation, thus providing what is commonly referred to as snoring.

The present invention therefor envisages a device capable of being readily fabricated using premoulded components or of being fitted with one or more premoulded components.

CLAIMS

1. A dental orthosis useful for an appropriate or intended human user in the treatment of snoring and/or sleep apnoea, the device comprising

palate fitting means to fit on the upper teeth and against the hard palate of the user and to maintain an airway passageway for such a user during sleep through the oral cavity under at least most of said palate fitting means, and

downwardly and rearwardly protruding means supported by said palate fitting means extending from below a palate covering rear part of said palate fitting means to extend downwardly and rearwardly a distance in the range of from 2mm to 20mm sufficient for such a user to prevent the falling back of the tongue of the user during sleep.

2. A device as claimed in claim 1 wherein said palate fitting means includes at least on the front thereof at least one downwardly extending means to space the lips of the user when the device is being worn.

3. A device as claimed in claim 1 or claim 2 wherein said palate fitting means on each side thereof includes at least one downwardly extending means to space the users molars apart by being capable of bearing on the lower teeth between the canine teeth (if any) and the rearmost molar (if still present).

4. A device as claimed in any one of the preceding claims wherein said palate fitting means is moulded as a fitted article for a particular patient at least in respect of that surface or those surfaces to fit on the upper teeth and hard palate.

5. A device as claimed in any one of the preceding claims wherein said downwardly and rearwardly protruding means includes at its distal end (ie. that to be adjacent the tongue of a user) a surface configured to contact the tongue over a region to prevent said falling back of the tongue.

6. A device of any one of the preceding claims wherein said palate fitting means is of polyethylene.

7. A device of any one of the preceding claims wherein said protruding means is of polyethylene.

8. A device as claimed in any one of the preceding claims wherein said downwardly and rearwardly protruding means is formed in a polyethylene material as two straps heated and joined together and attached to the palate fitting means as an attachment specific for an intended user.

9. A device as claimed in any one of claims 1 to 5 wherein said palate fitting means has been customised for an intended user and said downwardly and rearwardly protruding means has been customised for such a patient before or after attachment thereof to said

palate fitting means, said palate fitting means and said rearwardly protruding means not being formed as an integral component.

10. A device as claimed in any one of the preceding claims substantially as hereinbefore described with reference to any one or more of the accompanying drawings.

11. Componentry of a dental orthosis capable of being customised for a specific patient to provide a dental orthosis as claimed in any one of the preceding claims, said componentry comprising

a blank to provide said palate fitting means and being conformable under the action of heat to fit the upper teeth and hard palate of an intended user, and

attached or attachable protruding means to extend downwardly and rearwardly a distance capable of being customised and/or after being customised for such an intended user.

12. Componentry claimed in claim 8 wherein each is formed from a polyethylene material.

13. A method of treating a human being to minimise snoring and/or to treat sleep apnoea, said method comprising the step of customising a device as claimed in any one of claims 1 through 9 for such a patient and thereafter having the patient wear such a device during sleeping.

14. A method as claimed in claim 13 wherein said customising for such a patient is by means of customising a selected preformed palate fitting means of polyethylene by vacuum forming with heat over a dental stone prepared from an alginate moulding of the upper teeth and hard palate of the patient and before or after attachment of a selected said downwardly and rearwardly protruding means adjusting the same for length and/or angle.

15. A method as claimed in claim 13 and claim 14 wherein the selection of said downwardly and rearwardly protruding means is by reference to the measurement for the patient from the last tooth on either the right or left upper side to the farthest point of the rearward top section of the tongue whilst fully relaxed.

16. A method as claimed in claim 15 wherein the measuring to provide the referenced measurement is by using a wooden spatula while providing with such wooden spatula a downward pressure on the tongue.

17. A method of any one of claims 13 to 16 when performed substantially as hereinbefore described with reference to any of the accompanying drawings.

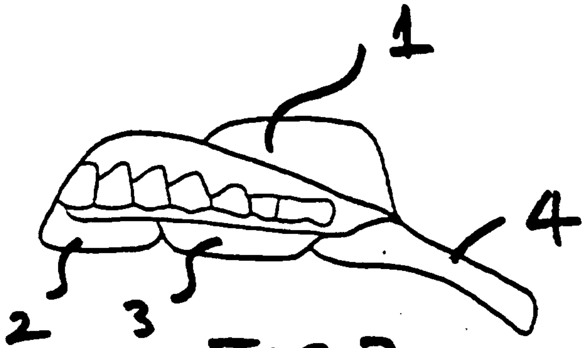

FIG3

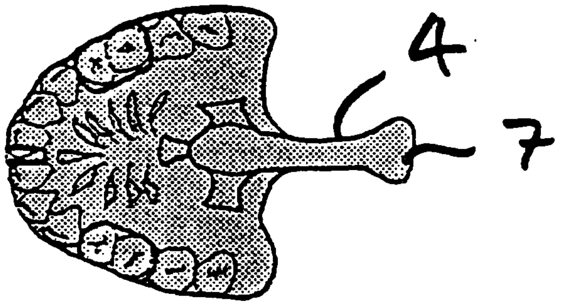

FIG2

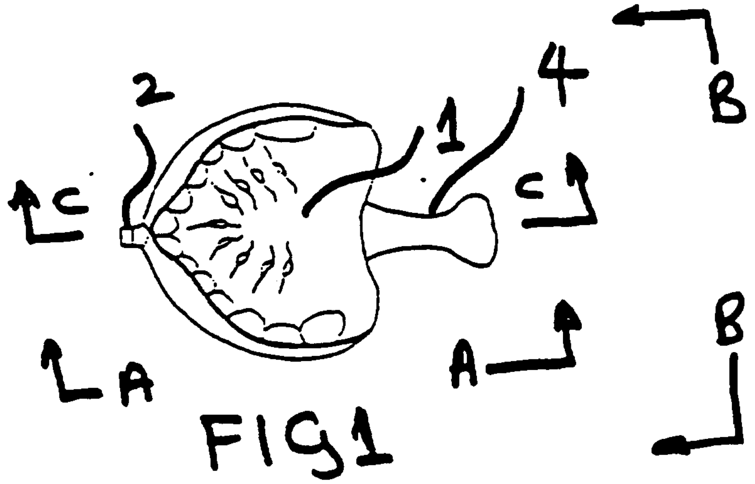

FIG1

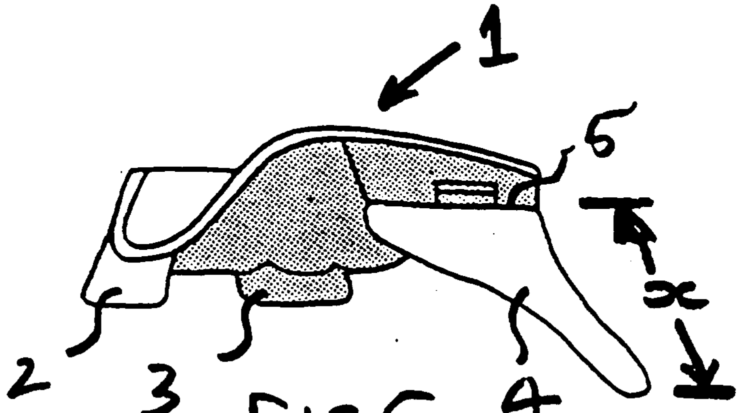

FIG5

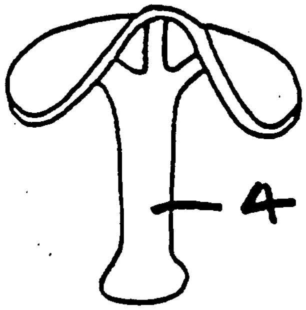

FIG4

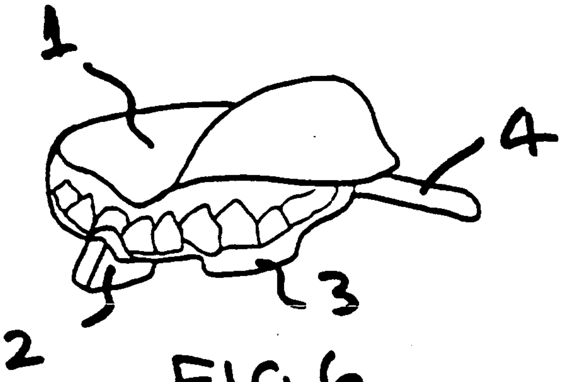

FIG6

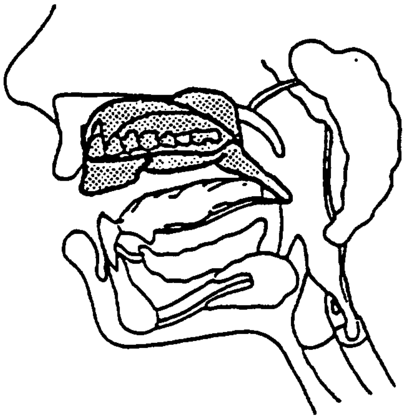

FIG8

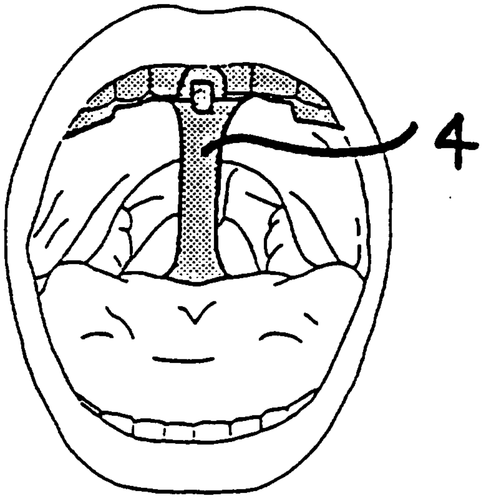

FIG7

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/NZ 95/00103

A. CLASSIFICATION OF SUBJECT MATTER

Int Cl^6: A61F 5/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC : A61F 5/56

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU : A61F 5/56

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3132647 A (CORNIELO) 12 May 1964 See figures 3 & 5 and column 1 lines 63-66	1,3-7,9-13
X	US 4669459 A (SPIEWAK) 2 June 1987 See figure 1	1,4-7,9,11-13
A	GB 2264868 A (MATELJAN) 15 September 1993	1-17

☒ Further documents are listed in the continuation of Box C ☒ See patent family annex

* Special categories of cited documents:

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Date of the actual completion of the international search 2 January 1996	Date of mailing of the international search report 23 JAN 1996
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INTERNATIONAL SEARCH REPORT

International Application No.
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C (Continuation)	DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5092346 A (HAYS) 3 March 1992	1-17
A	US 4169473 A (SAMELSON) 2 October 1979	1-17

Information on patent family members

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	3132647	US	4669459				
GB	2264868	AU	34040/93				
US	5092346	AU	23548/88	CA	1321332	EP	312368
		JP	2001261				
US	169473	US	4304227				

END OF ANNEX

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